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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/588,318

12/26/2006

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12/08/2010

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EXAMINER

MEKHLIN, ELI S

ART UNIT

PAPER NUMBER

1728

NOTIFICATION DATE

DELIVERY MODE

12/08/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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DETAILED ACTION

(1)

Applicant's Amendment filed November 12, 2010, has been entered. Applicant cancelled claims 1-11 and added claims 12-19. No new matter has been entered. Claims 12-19 are pending before the Office for review.

(2)

Response to Arguments

Applicant's arguments filed November 12, 2010, have been fully considered but they are not persuasive.

Applicant's first argument is that Yanagase and Fuji do not disclose a combination of the anionic surfactant as claimed and a nonionic surfactant. However, this argument is not persuasive as Yanagase clearly discloses the claimed anionic surfactant (polyoxyethylene alkylphenyl ether sulfate) and Fuji teaches that adding nonionic surfactants to the compositions taught by Yanagase allows for the dispersion of the colloidal silica particles. Therefore, the combination of Yanagase and Fuji clearly discloses this feature.

Applicant's next argument is that Yanagase does not disclose the addition of other components to ensure that the area of exposure of colloidal silica on the surface of the coating is 70%. However, it is not clear to Examiner what these "other components" are or where they can be found in the claimed invention. Yanagase and Fuji, as explained below, teach each element of the claimed invention. If an "other

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component" is essential to the operation of the claimed invention, the "other component" should be included in the claimed invention.

Applicant also argues that neither Yanagase or Fuji suggest that anionic and nonionic emulsifiers can selectively disperse colloidal silica to the surface of the coating. This feature is not found in the claimed invention. Moreover, even if claimed, it is clear that Yanagase and Fuji meet the compositional requirements of the claimed invention, meaning the properties would be expected to be the same.

Applicant next argues that "Greigger fails to disclose a coating composition of the present invention comprising colloidal silica exposed at a coating surface wherein the colloidal silica occupies 70% or more of the coating surface" (emphasis in original). However, this argument is unpersuasive because the combination of Yanagase, Fuji and Greigger meets the compositional requirements of the claimed invention, meaning the coating properties would be expected to be the same.

Applicant also presents evidence of unexpected results to overcome the obviousness rejection. However, this evidence is insufficient to overcome the rejection, as presented below, because the evidence, when considered as a whole, is not persuasive. Specifically, after consideration of Examples 1-23 and Comparative Examples 1-4 in the Specification and Additional Comparative Examples 1 and 2 in the Declaration filed concurrently with this response, it is clear that the proffered evidence of unexpected results is not commensurate in scope with the claimed invention.

Comparative Example 4 is the best illustration as to why the proffered evidence is not persuasive. As seen in Comparative Example 4, the makeup of the polymer

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component of the composition also influences the colloidal silica at the coating surface. However, the claimed invention is silent as to this feature. Additionally, Examples 22 and 23 seem to suggest that ethanol is an essential feature of the claimed invention and necessary to achieve the desired colloidal silica coverage. However, this feature is also not in the claimed invention. A comparison of Examples 19 and 20 also indicates the importance of the polymer composition to the percent-amount of colloidal silica at the coating surface. The same is true for a comparison of Examples 8 and 9.

Therefore, for the reasons discussed above, the proffered evidence of unexpected results are not persuasive because the evidence is not commensurate in scope with the claimed invention. Specifically, the evidence indicates that the polymer composition influences the area of colloidal silica exposed at the coating surface. However, this feature is not recited in the claimed invention.

(3)

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 12-19 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: the polymer composition. Specifically, Examples 8 and 9 and 19 and 20 and Comparative Example 4 indicate that the polymer composition is essential to achieving the feature that an area

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of colloidal silica exposed at a coating surface occupies 70% or more of the coating surface.

(4)

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 12-14 and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanagase et al. (JP 0916554 A) in view of Fuji et al. (U.S. Publication No. 2002/0134026).

With respect to **claim 12**, Yanagase teaches a coating that comprises an emulsion of a graft block copolymer and colloidal silica. Paragraphs 10 and 11. The colloidal silica is added in its solid form to the emulsion at a ratio of 1 to 300 parts of silica per 100 weight parts polymer, which covers the claimed range. Paragraphs 11 and 59. As per MPEP 2144.05, when claimed ranges lie inside ranged disclosed by the prior art, a *prima facie* case of obviousness exists. Additionally in a working example, Yanagase teaches that the colloidal silica has a particle size of 10 to 20 nanometers, which is less than 60 nanometers. Paragraph 70. Finally, Yanagase teaches that a coating composition further comprises sodium polyoxyethylene alkylphenyl ether sulfate, a sulfate salt of polyoxyalkylene alkylaryl ether (anionic surfactant) but is silent as to whether any other components are added to the composition to ensure that the area of colloidal silica exposed at a coating surface occupies 70% or more of the coating surface.

However, Fuji, which deals with coating agents, teaches that a nonionic surfactant can be added to coatings as a dispersing agent for colloidal silica particles. Paragraph 76.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of invention to include a nonionic surfactant in the coating composition taught by Yanagase because Fuji teaches that doing so disperses the colloidal silica. Fuji, Paragraph 76. Finally, a person having ordinary skill in the art at the time of invention would have appreciated that the coating taught by Yanagase and Fuji, as combined above, meets the 70% requirement of the claimed invention because the coating meets the compositional requirements of the present claim and it necessarily follows that identical coating compositions have identical properties.

With respect to **claim 13**, Yanagase and Fuji, as combined above, teach an aqueous coating composition that comprises an emulsion of a graft block copolymer and colloidal silica. Yanagase, Paragraphs 10, 11 and 61. The colloidal silica is added in its solid form to the emulsion at a ratio of 1 to 300 parts of silica per weight of 100 parts polymer, which covers the claimed range. Yanagase, Paragraphs 11 and 59. As per MPEP 2144.05, when claimed ranges lie inside ranged disclosed by the prior art, a *prima facie* case of obviousness exists. Additionally in a working example, Yanagase teaches that the colloidal silica has a particle size of 10 to 20 nanometers, which is less than 60 nanometers. Yanagase, Paragraph 70. Yanagase further teaches that a coating composition further comprises sodium polyoxyethylene alkylphenyl ether sulfate, a sulfate salt of polyoxyalkylene alkylaryl ether (anionic surfactant). Yanagase,

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Paragraphs 46 and 53. Fuji teaches that a nonionic surfactant can be added to coatings as a dispersing agent for colloidal silica particles. Paragraph 76.

Finally, with respect to the polymer composition, Yanagase teaches that the polymer can comprise a monomer, which can be polymerized via radical polymerization, having dimethylsiloxane, a hydrolysable silyl group, and a vinyl monomer unit.

Paragraph 11. Specifically, Yanagase teaches that the content of the vinyl monomer unit comprises 50 to 98 wt-% of the entire polymer, meaning that the remainder of the polymer unit comprises the radical polymerizable unit containing hydrolysable silyl units.

Paragraph 40. The ranges of these monomer components in the polymer overlap with the claimed ranges, establishing a *prima facie* case of obviousness. See MPEP 2144.05. Yanagase teaches that the radical polymerizable monomer unit having the hydrolysable silyl group comprises up to 2 wt% of the polymer (2 parts by mass) and that the vinyl monomer (copolymerizable monomer) comprises the remainder.

Paragraph 40.

With respect to **claim 14**, Yanagase and Fuji, as combined above, teach that the coating composition is an aqueous coating material. Yanagase, Paragraphs 61 and 68.

With respect to **claim 17**, Yanagase and Fuji, as combined above, teach that the coating composition is used in a process wherein the coating is provided, i.e. applied, on a substrate to produce a coated substrate. Yanagase, Paragraph 62.

With respect to **claim 18**, Yanagase and Fuji, as combined above, teach that the coating composition is used in a process wherein the coating is provided, i.e. applied, on a substrate to produce a coated substrate. Yanagase, Paragraph 62.

With respect to **claim 19**, Yanagase and Fuji, as combined above, teach that the aqueous coating material is used in a coating. Yanagase, Paragraphs 61 and 62.

(5)

Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanagase (JP 09165554 A) in view of Fuji et al. (U.S. Publication No. 2002/0134026), as applied to claims 12-14 and 17-19 and further in view of Greigger (U.S. Patent No. 4,435,219).

With respect to **claims 15 and 16**, Yanagase and Fuji, as combined above, teach an aqueous coating composition but are silent as to whether it comprises 0.5 to 20 parts by mass of an organic solvent having less than 0.8 a distribution coefficient of octanol/water for 100 parts by mass of the polymer.

However, Greigger, which deals with colloidal silica coating compositions, teaches that coatings that contain alcohols (organic solvent) have improved stability, temperature resistance and water resistance. Col. 2, Lines 3-6, Col. 4, Lines 35-42.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of invention to add an organic solvent, such as isopropanol, which has an octanol/distribution coefficient of 0.05, to the composition taught by Yanagase because Greigger teaches that doing so improves stability, temperature resistance and water resistance of the coating. Col. 2, Lines 3-6, Col. 4, Lines 35-42. Finally, as seen in Example 1 (Col. 9), Greigger teaches that 60 pbw colloidal silica is added to 70 pbw isopropanol, meaning that the silica is added in a 6:7 ratio relative to the organic solvent. Accordingly, when 12 parts by mass colloidal silica is added to the coating

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composition, as taught by Yanagase, a person having ordinary skill in the art at the time of invention would have added 14 parts by mass organic solvent, which is within the claimed range. Additionally, the colloidal silica is added with respect to 100 parts by mass polymer, meaning that the same calibration is made for the organic solvent.

(6)

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ELI S. MEKHLIN whose telephone number is (571)270-7597. The examiner can normally be reached on 5/4/9.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer K. Michener can be reached on 571-272-1424. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ELI S MEKHLIN/
Examiner, Art Unit 1728

/Jennifer K. Michener/
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